

Trend Study 2R-5-06

Study site name: Coldwater WMA.

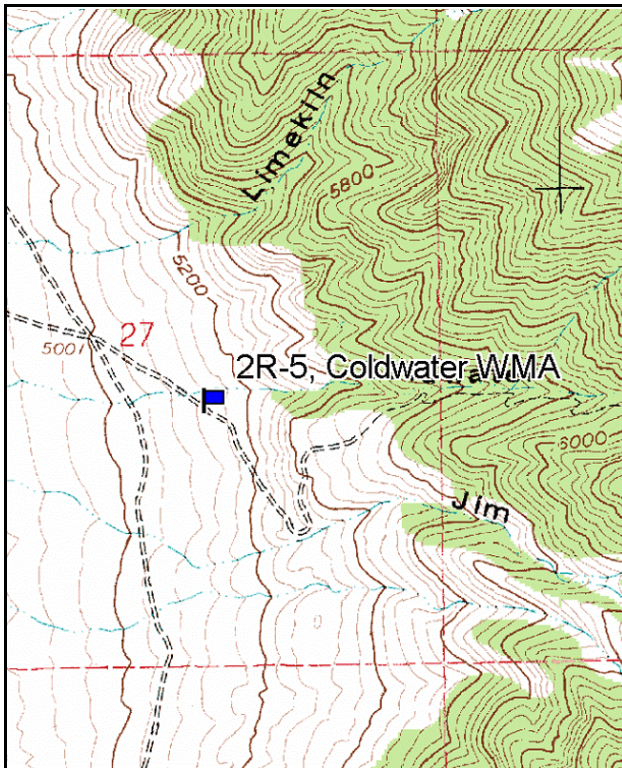
Vegetation type: Big Sagebrush.

Compass bearing: frequency baseline 240 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

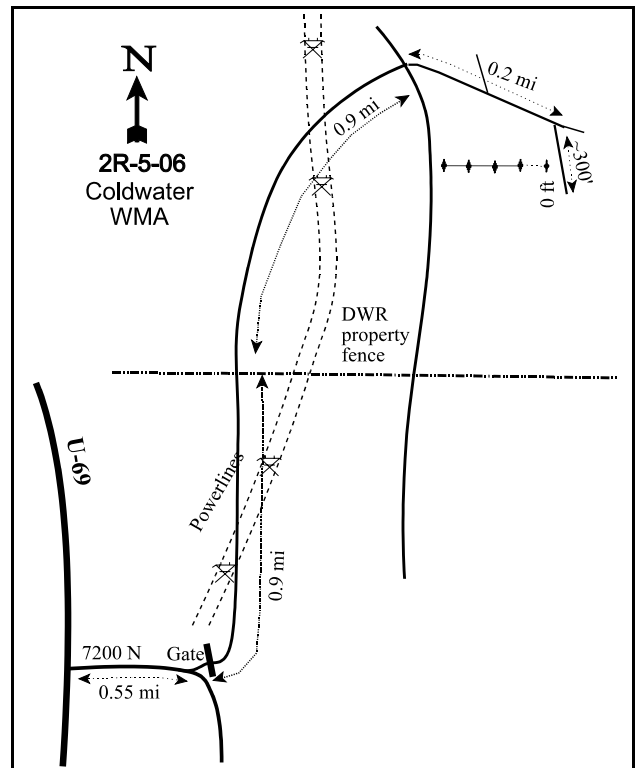
LOCATION DESCRIPTION

From the junction of 7200 North and U-69 in Honeyville, proceed east and north for 0.55 miles to a gate. Proceed 0.9 miles to the north to a fence. Continue another 0.9 miles and as the road turn south keep left for 0.2 miles to a fork, keep right for approximately 300 feet to a witness post. Walk 11 paces at 210 degrees magnetic to the 0' stake. The baseline runs 240 degrees magnetic.



Map name: Honeyville

Township 11N, Range 2W, Section 34



Diagrammatic Sketch

GPS: NAD 27, UTM 12S 4632412 N, 486340 E

DISCUSSION

Cold Water WMA - Trend Study No. 2R-5

Study Information

This study is located northeast of Honeyville, near the mouth of Coldwater Canyon (elevation: 5,100 feet, slope: 18%, aspect: southwest). The vegetation type is a mountain big sagebrush community. The area is administered by the DWR as a Wildlife Management Area for wintering mule deer. The spring near the study has been developed into a trough and the study is nearly surrounded by roads. Pellet group data in 1998 estimated at only 1 deer day use/acre (3 ddu/ha). Pellet group data in 2006 was estimated at 13 deer and 1 cow days use/acre (31 ddu/ha and 2 cdu/ha).

Soil

Soil is classified in the Sterling series, a very deep, well drained soil that formed in alluvium, colluvium, and lacustrine deposits derived mainly from limestone and other sedimentary rocks (USDA-NRCS 2006). The texture is a loam with a neutral pH of 7.1. Organic matter is relatively high at 6.7%. Effective rooting depth was only 8 inches, but was limited by the rocky nature of the area. The ratio of protective cover (vegetation, litter, and cryptogams) to bare ground has increased from 5.7 in 1998 to 8.8 in 2006. An erosion condition class completed in 2006 determined erosion to be stable.

Browse

The key browse species is mountain big sagebrush and is located just below the juniper covered steeper slopes. A few junipers are encroaching into the sagebrush community. Mountain big sagebrush density in 1998 averaged 2,820 plants/acre and had changed very little in 2006 to 2,780 plants/acre. As the plants have grown, cover has more than doubled from 12% in 1998 to 30% in 2006. Sagebrush cover this high may be detrimental to herbaceous understory production. Utilization is light and decadence has been low at 4-6%. Young recruitment averaged 11% in 1998, while no young plants were observed in 2006. Annual leader growth averaged 2 inches in 2006. Other shrubs include: rubber rabbitbrush, broom snakeweed, and smooth sumac. Smooth sumac was abundant in 1998 with 3,340 plants/acre, but all of them were young plants and none of those sampled in 1998 survived to maturity.

Herbaceous Understory

The herbaceous understory is composed mainly of annual weeds or perennial increasers. In 1998, perennial grass cover only averaged 3%, while annual grass cover averaged 18%. Forbs were dominated by two species, ragweed and white sweetclover. In 2006, the herbaceous understory was not any healthier, but the composition was different. Annual grass cover decreased from 18% to 8%, due to a significant decreases in Japanese brome and cheatgrass nested frequencies. Perennial grasse cover increased to 15%, but much of the increase was due to bulbous and Sandberg bluegrass. Bulbous bluegrass can form a dense mat in disturbed areas and prevent other species from establishing. Ragweed decreased from 8% cover to 1%, but spreading dogbane increased from 0% to 3%. Spreading dogbane is a native species, but is considered poisonous to browsing animals. Dyer's woad was sampled for the first time in 2006.

2006 TREND ASSESSMENT

Trend for key browse, mountain big sagebrush, is stable. Density has remained similar to 1998, but cover has increased from 12% to 30%. The population is predominately mature and no young plants were observed in 2006. Trend for grasses is up. Annual grass cover decreased by half, while Sandberg bluegrass increased significantly. Bulbous bluegrass increased significantly and may continue to increase without some competition from perennial species. Trend for forbs is slightly down. Perennial forb sum of nested frequency decreased by 10% and the species composition is extremely poor. As well, dyer's woad was sampled for the first time in 2006. The Desirable Components Index rated this study as poor in 1998 and fair in 2006. The change was due to the browse cover increasing in 2006 and perennial grass cover increasing five-fold.

1998 winter range condition (DC Index) - poor (38) Mid-level potential scale

2006 winter range condition (DC Index) - fair (63) Mid-level potential scale
 browse - stable (0) grasses - up (+2) forbs - slightly down (-1)

HERBACEOUS TRENDS --
 Management unit 02R, Study no: 5

T y p e	Species	Nested Frequency		Average Cover %	
		'98	'06	'98	'06
G	Bromus brizaeformis (a)	20	13	.45	.11
G	Bromus japonicus (a)	_b 320	_a 128	6.78	1.61
G	Bromus tectorum (a)	_b 415	_a 216	10.87	6.23
G	Poa bulbosa	_a -	_b 177	-	6.16
G	Poa fendleriana	3	3	.06	.03
G	Poa pratensis	80	80	1.67	2.69
G	Poa secunda	_a 48	_b 120	1.00	5.05
G	Sporobolus cryptandrus	-	5	-	.63
Total for Annual Grasses		755	357	18.12	7.95
Total for Perennial Grasses		131	385	2.73	14.58
Total for Grasses		886	742	20.86	22.53
F	Alyssum alyssoides (a)	63	83	.26	.21
F	Allium sp.	-	2	-	.00
F	Ambrosia psilostachya	_b 178	_a 37	8.10	1.23
F	Apocynum androsaemifolium pumilum	_a -	_b 76	-	3.07
F	Artemisia ludoviciana	8	10	.53	.93
F	Asclepias asperula	4	11	.18	.59
F	Astragalus sp.	3	-	.03	-
F	Carduus nutans (a)	4	-	.00	-
F	Calochortus nuttallii	-	-	-	.00
F	Cirsium undulatum	1	2	.00	.15
F	Collomia linearis (a)	3	-	.00	-
F	Collinsia parviflora (a)	-	2	-	.00
F	Cymopterus sp.	-	2	-	.00
F	Draba sp. (a)	-	3	-	.00
F	Epilobium brachycarpum (a)	79	90	.44	.22
F	Erodium cicutarium (a)	_a -	_b 26	-	.32
F	Helianthus annuus (a)	22	9	.26	.16
F	Holosteum umbellatum (a)	7	5	.15	.01
F	Isatis tinctoria	-	-	-	.00
F	Lactuca serriola	15	-	.09	-
F	Melilotus alba	17	8	1.47	1.25

T y p e	Species	Nested Frequency		Average Cover %	
		'98	'06	'98	'06
F	Melilotus officinalis	_a 12	_b 34	.90	.87
F	Microsteris gracilis (a)	-	9	-	.01
F	Penstemon sp.	6	-	.03	-
F	Phlox longifolia	-	4	-	.00
F	Tragopogon dubius	9	3	.09	.00
F	Viola sp.	-	4	-	.03
F	Zigadenus paniculatus	_a 7	_b 40	.03	.73
Total for Annual Forbs		178	227	1.13	0.95
Total for Perennial Forbs		260	233	11.49	8.90
Total for Forbs		438	460	12.63	9.85

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --

Management unit 02R, Study no: 5

T y p e	Species	Strip Frequency		Average Cover %	
		'98	'06	'98	'06
B	Artemisia tridentata vaseyana	70	67	11.63	29.52
B	Chrysothamnus nauseosus albicaulis	15	15	5.74	3.78
B	Gutierrezia sarothrae	35	12	4.34	.39
B	Rhus trilobata	15	1	1.25	.30
Total for Browse		135	95	22.97	34.00

CANOPY COVER, LINE INTERCEPT --

Management unit 02R, Study no: 5

Species	Percent Cover
	'06
Artemisia tridentata vaseyana	32.31
Chrysothamnus nauseosus albicaulis	6.46
Gutierrezia sarothrae	.13
Rhus trilobata	.43

KEY BROWSE ANNUAL LEADER GROWTH --

Management unit 02R , Study no: 5

Species	Average leader growth (in)	
	'01	'06
Artemisia tridentata vaseyana	-	2.1

BASIC COVER --

Management unit 02R, Study no: 5

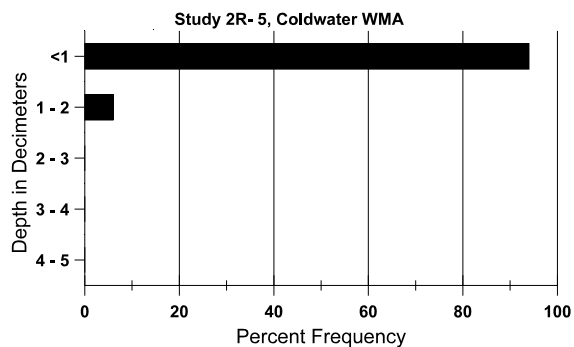
Cover Type	Average Cover %	
	'98	'06
Vegetation	53.35	65.52
Rock	11.89	8.32
Pavement	6.50	3.90
Litter	42.60	43.31
Cryptogams	.00	0
Bare Ground	8.63	3.10

SOIL ANALYSIS DATA --

Herd Unit 02R, Study no: 5, Cold Water WMA

Effective rooting depth (in)	Temp °F (depth)	PH	Loam			%OM	PPM P	PPM K	dS/m
			% sand	% silt	% clay				
7.7	75.8 (9.4)	7.1	38.7	36.7	24.6	6.7	11.5	150.4	0.88

Stoniness Index



PELLET GROUP DATA --

Management unit 02R, Study no: 5

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'06	'98	'06
Rabbit	-	17	-	-
Deer	-	6	-	13 (31)
Cattle	-	-	-	1 (2)

BROWSE CHARACTERISTICS --

Management unit 02R, Study no: 5

		Age class distribution (plants per acre)					Utilization					
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% dying	% poor vigor	Average Height Crown (in)
<i>Artemisia tridentata vaseyana</i>												
98	2820	100	300	2360	160	980	9	0	6	5	8	30/37
06	2780	260	-	2660	120	600	6	0	4	1	1	33/41
<i>Chrysothamnus nauseosus albicaulis</i>												
98	400	-	-	360	40	80	0	0	10	-	0	45/68
06	420	-	-	80	340	-	0	0	81	81	81	36/58
<i>Gutierrezia sarothrae</i>												
98	1960	-	40	1920	-	20	0	0	0	-	0	18/22
06	320	-	-	200	120	140	0	0	38	31	31	12/12
<i>Rhus trilobata</i>												
98	3340	40	3340	-	-	-	0	0	-	-	0	-/-
06	20	-	-	20	-	-	0	0	-	-	0	47/87